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DICTIONARY FILE UPDATES:    3 MAY 2006  HIGHEST RN 882736-15-4

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*                                                                    *
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* the IDE default display format and the ED field has been added,    *
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*                                                                    *
**********************************************************************

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=> FILE HCAPLU
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FILE COVERS 1907 - 4 May 2006  VOL 144 ISS 19
FILE LAST UPDATED: 3 May 2006  (20060503/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

<MXO

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=> D QUE
L14      729854 SEA FILE=REGISTRY ABB=ON  ((NA OR K OR MG OR CA OR SR OR NI OR
                CO OR SI OR TI OR B OR AL OR SN OR MN OR CR OR FE OR V OR
                ZR)(L)(P OR S OR W OR F)(L)O)/ELS
L15      137262 SEA FILE=REGISTRY ABB=ON  L14 NOT 1-400/NR
L16      523418 SEA FILE=HCAPLUS ABB=ON  L15
L17       10236 SEA FILE=HCAPLUS ABB=ON  L16(L)DEV/RL
L18        1589 SEA FILE=HCAPLUS ABB=ON  L17 AND BATTER?
L19          10 SEA FILE=HCAPLUS ABB=ON  L18 AND SURFACE?(3A)TREAT?
L22          10 SEA FILE=HCAPLUS ABB=ON  L18 AND SURFACE?(3A)?TREAT?
L24           2 SEA FILE=HCAPLUS ABB=ON  L18 AND ?TREAT?(3A)?LAYER?
L26        4130 SEA FILE=HCAPLUS ABB=ON  L16 AND BATTER?
L27          10 SEA FILE=HCAPLUS ABB=ON  L26 AND ?TREAT?(3A)?LAYER?
L28          51 SEA FILE=HCAPLUS ABB=ON  L26 AND SURFACE?(3A)?TREAT?
L29          54 SEA FILE=HCAPLUS ABB=ON  L19 OR L22 OR L24 OR L27 OR L28
L30          20 SEA FILE=HCAPLUS ABB=ON  L29 AND (LI OR LITHIUM)
L31           1 SEA FILE=REGISTRY ABB=ON  LITHIUM/CN
L32       80726 SEA FILE=HCAPLUS ABB=ON  L31
L33           3 SEA FILE=HCAPLUS ABB=ON  L29 AND L32
L34          20 SEA FILE=HCAPLUS ABB=ON  L30 OR L33
L36          47 SEA FILE=HCAPLUS ABB=ON  L29 AND ELECTROCHEMICAL/SC,SX
L37          20 SEA FILE=HCAPLUS ABB=ON  L34 AND L36
L38           6 SEA FILE=HCAPLUS ABB=ON  (TREAT?(3A)BASE OR COVER?(3A)LAYER)
                AND L26
L39          26 SEA FILE=HCAPLUS ABB=ON  L37 OR L38
L40          87 SEA FILE=HCAPLUS ABB=ON  L26 AND LITHIAT?
L41           0 SEA FILE=HCAPLUS ABB=ON  (TREAT?(3A)BASE OR COVER?(3A)LAYER)
                AND L40
L43           0 SEA FILE=HCAPLUS ABB=ON  L40 AND ?TREAT?(3A)?LAYER?
L44          26 SEA FILE=HCAPLUS ABB=ON  L39 OR L41 OR L43
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=> D L44 BIB ABS IND HITSTR 1-26

L44  ANSWER 1 OF 26  HCAPLUS  COPYRIGHT 2006 ACS on STN
AN   2006:340654  HCAPLUS
TI   Lithium anode with lithium mixed oxide protective
     coating for secondary lithium battery
IN   Ukaji, Masaya; Mino, Shinji; Shibano, Yasuyuki; Ito, Shuji
PA   Matsushita Electric Industrial Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 19 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.          DATE
     ---------------     ----   --------    -------------------      --------
PI   JP 2006100083        A2    20060413    JP 2004-283846           20040929
PRAI JP 2004-283846                20040929
AB   The anode comprises a Li or a Li alloy anode coated
     with (1) a pretreatment layer containing a Li
     ion conductive substance and (2) a protective layer comprising LixPTyOz (T
     = Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zr, Nb, Mo, Ru, Ag, Ta, W, Pt, and/or Au;
     x = 2.0-7.0; y = 0.01-1.0; z = 3.5-8.0) or LixMOyNz [M = Si, B, Ge, Al, C,
     Ga, and/or S; (a) x = 0.6-1.0, y = 1.05-1.99, z = 0.01-0.5, (b) x =
     1.6-2.0, y = 2.05-2.99, z = 0.01-0.5, (c) x = 1.6-2.0, y = 3.05-3.99, z =
     0.01-0.5, or (d) x = 4.6-5.0, y = 3.05-3.99, z = 0.01-0.5]. Secondary
```

lithium battery equipped with the anode is also claimed. Since the protective layer has high stability to water and ion conductivity, deterioration of the anode is prevented, and the **battery** has excellent cycling performance.

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST **battery** anode **lithium** mixed oxide protective coating; anode **lithium** mixed oxynitride protective coating **battery**; **lithium battery** anode protective coating water resistance ion cond

IT **Battery** anodes
(anode having **lithium** mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for **Li battery**)

IT Coating materials
(water-resistant; anode having **lithium** mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for **Li battery**)

IT **Lithium** alloy, base
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anode base; anode having **lithium** mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for **Li battery**)

IT **7439-93-2, Lithium**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anode base; anode having **lithium** mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for **Li battery**)

IT 10377-52-3, **lithium** phosphate (Li3PO4) 14332-24-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(pretreatment coating; anode having **lithium** mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for **Li battery**)

IT 782495-37-8
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(protective coating, pretreatment coating; anode having **lithium** mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for **Li battery**)

IT 554-13-2 10102-24-6 10377-48-7 12315-28-5 13453-69-5
782495-23-2 782495-24-3 782495-25-4
782495-26-5 782495-27-6 782495-28-7
782495-29-8 782495-30-1 **782495-31-2** 782495-32-3
782495-33-4 782495-34-5 782495-35-6 782495-36-7 782495-38-9
782495-39-0 **782495-41-4** **782495-42-5** **782495-43-6** 782495-44-7
782495-47-0 782495-48-1 782495-49-2
782495-50-5 782495-51-6 782495-52-7
782495-53-8 **782495-54-9** 782495-55-0 782495-56-1
782495-57-2 782495-58-3 782495-59-4 **782495-60-7**
782495-63-0 782495-64-1 782495-65-2 782495-66-3
782495-67-4 782495-69-6 782495-70-9 782495-72-1 782495-74-3
882681-95-0 882682-14-6 882682-16-8
882682-19-1 882682-30-6 882682-32-8 882682-35-1
882682-38-4 882682-40-8 882682-42-0 **882682-44-2**
882682-46-4 882682-48-6 882682-50-0 882682-52-2 **882682-54-4**
882682-56-6 882682-58-8 882682-60-2 882682-62-4 882682-64-6

RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(protective coating; anode having **lithium** mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for **Li battery**)

IT **7439-93-2, Lithium**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anode base; anode having **lithium** mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for **Li battery**)

RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT **782495-23-2 782495-24-3 782495-25-4**
782495-26-5 782495-27-6 782495-28-7
782495-29-8 782495-31-2 782495-47-0
782495-48-1 782495-49-2 782495-50-5
782495-51-6 782495-52-7 782495-54-9
782495-60-7 782495-63-0 882681-95-0
882682-14-6 882682-16-8 882682-19-1
882682-44-2 882682-54-4
RL: **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(protective coating; anode having **lithium** mixed oxide protective coating with high water resistance and ion conductivity on pretreatment coating for **Li battery**)

RN 782495-23-2 HCAPLUS
CN Lithium titanium metaphosphate oxide (Li2.8Ti0.2(PO3)O0.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ti	0.2	7440-32-6
Li	2.8	7439-93-2

RN 782495-24-3 HCAPLUS
CN Lithium vanadium metaphosphate oxide (Li2.8V0.2(PO3)O0.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
V	0.2	7440-62-2
Li	2.8	7439-93-2

RN 782495-25-4 HCAPLUS
CN Chromium lithium metaphosphate oxide (Cr0.2Li2.8(PO3)O0.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Cr	0.2	7440-47-3
Li	2.8	7439-93-2

RN 782495-26-5 HCAPLUS
CN Lithium manganese metaphosphate oxide (Li2.8Mn0.2(PO3)O0.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Mn	0.2	7439-96-5
Li	2.8	7439-93-2

RN 782495-27-6 HCAPLUS
CN Iron lithium metaphosphate oxide (Fe0.2Li2.8(PO3)O0.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Li	2.8	7439-93-2
Fe	0.2	7439-89-6

RN 782495-28-7 HCAPLUS
CN Cobalt lithium metaphosphate oxide (Co0.2Li2.8(PO3)O0.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Co	0.2	7440-48-4
Li	2.8	7439-93-2

RN 782495-29-8 HCAPLUS
CN Lithium nickel metaphosphate oxide (Li2.8Ni0.2(PO3)O0.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ni	0.2	7440-02-0
Li	2.8	7439-93-2

RN 782495-31-2 HCAPLUS
CN Lithium zirconium metaphosphate oxide (Li2.8Zr0.2(PO3)O0.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Zr	0.2	7440-67-7
Li	2.8	7439-93-2

RN 782495-47-0 HCAPLUS
CN Lithium vanadium oxide phosphate (Li2.8V0.2O0.4(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.4	17778-80-2
O4P	1	14265-44-2
V	0.2	7440-62-2
Li	2.8	7439-93-2

RN 782495-48-1 HCAPLUS
CN Chromium lithium oxide phosphate (Cr0.2Li2.8O0.2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.2	17778-80-2
O4P	1	14265-44-2
Cr	0.2	7440-47-3
Li	2.8	7439-93-2

RN 782495-49-2 HCAPLUS
CN Lithium manganese oxide phosphate (Li2.8Mn0.2O0.3(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.3	17778-80-2
O4P	1	14265-44-2
Mn	0.2	7439-96-5
Li	2.8	7439-93-2

RN 782495-50-5 HCAPLUS
CN Iron lithium oxide phosphate (Fe0.2Li2.8O0.17(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.17	17778-80-2
O4P	1	14265-44-2
Li	2.8	7439-93-2
Fe	0.2	7439-89-6

RN 782495-51-6 HCAPLUS
CN Cobalt lithium oxide phosphate (Co0.2Li2.8O0.17(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

Component	Ratio	Component Registry Number
O	0.17	17778-80-2
O4P	1	14265-44-2
Co	0.2	7440-48-4
Li	2.8	7439-93-2

RN 782495-52-7 HCAPLUS
CN Lithium nickel oxide phosphate (Li2.8Ni0.2O0.1(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.1	17778-80-2
O4P	1	14265-44-2
Ni	0.2	7440-02-0
Li	2.8	7439-93-2

RN 782495-54-9 HCAPLUS
CN Lithium zirconium oxide phosphate (Li2.8Zr0.2O0.3(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.3	17778-80-2
O4P	1	14265-44-2
Zr	0.2	7440-67-7
Li	2.8	7439-93-2

RN 782495-60-7 HCAPLUS
CN Lithium titanium oxide phosphate (Li4Ti0.25O(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ti	0.25	7440-32-6
Li	4	7439-93-2

RN 782495-63-0 HCAPLUS
CN Lithium manganese oxide phosphate (Li3.25Mn0.25O(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Mn	0.25	7439-96-5
Li	3.25	7439-93-2

RN 882681-95-0 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

Component	Ratio	Component Registry Number
O	0.3	17778-80-2

O4P	1	14265-44-2
Ti	0.2	7440-32-6
Li	2.8	7439-93-2

RN 882682-14-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

Component	Ratio	Component Registry Number
O	2	17778-80-2
O4P	1	14265-44-2
V	0.25	7440-62-2
Li	3.75	7439-93-2

RN 882682-16-8 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

Component	Ratio	Component Registry Number
O	2	17778-80-2
O4P	1	14265-44-2
Cr	0.25	7440-47-3
Li	3.5	7439-93-2

RN 882682-19-1 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Zr	0.25	7440-67-7
Li	4	7439-93-2

RN 882682-44-2 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

Component	Ratio	Component Registry Number
N	0.3	17778-88-0
O	3.45	17778-80-2
S	0.5	7704-34-9
Si	0.5	7440-21-3
Li	2.8	7439-93-2

RN 882682-54-4 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

Component	Ratio	Component Registry Number
N	0.3	17778-88-0
O	2.45	17778-80-2
S	0.5	7704-34-9
B	0.5	7440-42-8
Li	1.3	7439-93-2

L44 ANSWER 2 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1132715 HCAPLUS
DN 143:389852
TI **Surface treatment** for metal-polymer laminated electrochemical cell package
IN Welker, Edward Earl; Yarber, Franklin E.
PA USA
SO U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2005233211	A1	20051020	US 2004-827539	20040419
WO 2005101544	A2	20051027	WO 2005-US13010	20050419

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 2004-827539 A 20040419
AB A method for preparing a metal-polymer laminate packaging material, a method for preparing a metal-polymer laminated electrochem. cell package, and an electrochem. cell package, wherein adhesion of the polymer to the metal sheet used in the packaging material and/or hydrophobicity of the metal sheet are improved. In accordance with the invention, the metal sheet is subjected to a **surface treatment** and thereafter coated with a polymer to form a metal-polymer laminate packaging material. Exemplary **surface treatments** include chromate or phosphate conversion coatings, anodization, or chemical cleaning the metal sheet with a caustic solution and/or an acidic solution
IC ICM H01M002-02
ICS B05D005-12; B05D003-00
INCL 429176000; 427327000; 427058000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 39, 56, 76
ST **surface treatment** metal polymer laminated electrochem cell packaging material; cleaning etching chromating phosphating electroless coating anodization **battery** covering
IT Carbonates, uses
Silicates, uses
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(caustic rinse; **surface treatment** for metal-polymer laminated electrochem. cell package)
IT Cleaning
(chemical; **surface treatment** for metal-polymer laminated electrochem. cell package)
IT Oxides (inorganic), uses

RL: DEV (Device component use); FMU (Formation, unclassified); TEM (Technical or engineered material use); FORM (Formation, nonpreparative); USES (Uses)
(coating made by anodizing electrolyte solution; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Coating process
(conversion; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Coating process
(electroless; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Fluorides, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(in chromate coating process; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Chromates
Phosphates, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(in coatings; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Secondary **batteries**
(**lithium**, packaging material for; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Deoxidation
(of metal with acids; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Adhesion, physical
(of polymer to metal sheet; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Adhesives
Anodization
Chromating
Coating process
Electronic packaging materials
Etching
Hydrophobicity
Laminated materials
Lamination
Surface treatment
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT Acids, uses
Bases, uses
RL: CPS (Chemical process); DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT Metals, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT Plastic films

(thermo-, heat-sealable **layer**; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT Cleaning
(to remove oil, grease, etc.; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT 7664-38-2, Phosphoric acid, uses
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(cleaning and phosphating process; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(film, foil, sheet; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT 18540-29-9P, Chromium(6+) ion, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(in coating; **surface treatment** for metal-polymer laminated electrochem. cell package)

IT 10022-31-8P, Barium nitrate
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT 1310-73-2, Sodium hydroxide, uses
RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT 526-95-4, D-Gluconic acid 7664-93-9, Sulfuric acid, uses
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

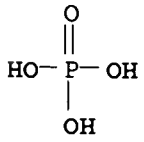
IT 7779-90-0, Zinc phosphate **10124-54-6**, Manganese phosphate **10402-24-1**, Iron phosphate
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT 25155-30-0, Sodium dodecylbenzenesulfonate
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

IT **10124-54-6**, Manganese phosphate **10402-24-1**, Iron phosphate
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**surface treatment** for metal-polymer laminated electrochem. cell package)

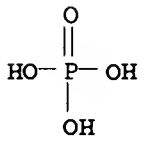
RN 10124-54-6 HCAPLUS

CN Phosphoric acid, manganese salt (8CI, 9CI) (CA INDEX NAME)



●x Mn(x)

RN 10402-24-1 HCAPLUS
CN Phosphoric acid, iron salt (8CI, 9CI) (CA INDEX NAME)



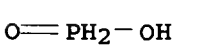
●x Fe(x)

L44 ANSWER 3 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1105810 HCAPLUS
DN 143:389778
TI Composite sheet body for fuel cell and secondary **battery** and its manufacture
IN Takashima, Masayuki; Yonezawa, Susumu; Kiyokawa, Hajime; Shinke, Hidemasa
PA Kyokawa Mekki Kogyo K. K., Japan; Seiren Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

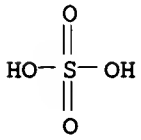
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005280164	A2	20051013	JP 2004-98885	20040330
PRAI	JP 2004-98885		20040330		

AB The title body has a porous sheet substrate, a H-absorbing alloy fine powder layer laminatedly bonded on the substrate, and a porous metal plated **layer covering** whole H-absorbing alloy fine powder layer bonded substrate; and is manufactured by laminatedly bonding a H-absorbing alloy fine powder on the porous sheet substrate; forming a metal plated **layer covering** the whole H-absorbing alloy fine powder layer bonded substrate; and porous forming the metal plated layer.
IC ICM B32B015-04
ICS C23C018-31; C23C018-52; C25D015-02; D06M011-83; D06M023-08; H01M004-24; H01M004-26; H01M008-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST fuel cell hydrogen secondary **battery** hydrogen absorbing alloy sheet; **battery** electrode hydrogen absorbing alloy metal plated

layer coating
IT **Battery** electrodes
Fuel cells
Secondary **batteries**
(manufacture of composite sheets containing H-absorbing alloy powder layer on
substrate with metal plated layer coating for fuel cells and secondary **batteries**)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(manufacture of composite sheets containing H-absorbing alloy powder layer on
substrate with metal plated layer coating for fuel cells and secondary **batteries**)
IT Polyester fibers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacture of composite sheets containing H-absorbing alloy powder layer on
substrate with metal plated layer coating for fuel cells and secondary **batteries**)
IT 56-40-6, Glycine, uses 471-34-1, Calcium carbonate, uses 1310-73-2, Sodium hydroxide, uses 7440-50-8, Copper, uses **7681-53-0**, Sodium hypophosphite **7786-81-4**, Nickel sulfate 7791-20-0, Nickel chloride hexahydrate 9002-84-0, PTFE 10043-35-3, Boric acid, uses **13770-89-3**
RL: MOA (Modifier or additive use); USES (Uses)
(manufacture of composite sheets containing H-absorbing alloy powder layer on
substrate with metal plated layer coating for fuel cells and secondary **batteries**)
IT 181147-99-9
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacture of composite sheets containing H-absorbing alloy powder layer on
substrate with metal plated layer coating for fuel cells and secondary **batteries**)
IT **7681-53-0**, Sodium hypophosphite **7786-81-4**, Nickel sulfate **13770-89-3**
RL: MOA (Modifier or additive use); USES (Uses)
(manufacture of composite sheets containing H-absorbing alloy powder layer on
substrate with metal plated layer coating for fuel cells and secondary **batteries**)
RN 7681-53-0 HCAPLUS
CN Phosphinic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)

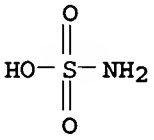


RN 7786-81-4 HCAPLUS
CN Sulfuric acid, nickel(2+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Ni(II)

RN 13770-89-3 HCAPLUS
CN Sulfamic acid, nickel(2+) salt (2:1) (8CI, 9CI) (CA INDEX NAME)



●1/2 Ni(II)

L44 ANSWER 4 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1006742 HCAPLUS
DN 143:443411
TI Improvement of high-voltage cycling behavior of surface-modified **Li**[Ni1/3Co1/3Mn1/3]O2 cathodes by fluorine substitution for **Li**-ion **batteries**
AU Kim, G.-H.; Kim, J.-H.; Myung, S.-T.; Yoon, C. S.; Sun, Y.-K.
CS Department of Chemical Engineering, Center for Information and Communication Materials, Hanyang University, Seoul, 133-791, S. Korea
SO Journal of the Electrochemical Society (2005), 152(9), A1707-A1713
CODEN: JESOAN; ISSN: 0013-4651
PB Electrochemical Society
DT Journal
LA English
AB To improve the electrochem. properties of **Li**[Ni1/3Co1/3Mn1/3]O2 at the high upper voltage limit of 4.6 V, O was partly substituted by F. Variation of lattice parameters and XPS anal. suggest that F substituted in the bulk material and is coated on the surface of **Li**[Ni1/3Co1/3Mn1/3]O2. **Li**[Ni1/3Co1/3Mn1/3]O2-zFz (z = 0.05 and 0.1) showed stable cycling performance and improvement of high rate capability compared to untreated **Li**[Ni1/3Co1/3Mn1/3]O2. F substitution catalyzes the growth of the primary particles, which in turn resulted in high tap d. as well as high volumetric capacity compared to **Li**[Ni1/3Co1/3Mn1/3]O2. DSC at 4.6 V clearly shows that F substitution markedly improves the thermal stability of **Li**[Ni1/3Co1/3Mn1/3]O2-zFz.
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST cobalt **lithium** manganese nickel oxide cathode fluorination **lithium battery**
IT **Battery** cathodes
Fluorination

(improvement of high-voltage cycling characteristics of **Li** [Ni1/3Co1/3Mn1/3]O2 cathodes for **Li**-ion **batteries** by fluorination)

IT **Surface treatment**
(improvement of high-voltage cycling characteristics of **Li** [Ni1/3Co1/3Mn1/3]O2 cathodes for **Li**-ion **batteries** by surface fluorination)

IT Secondary **batteries**
(**lithium**; improvement of high-voltage cycling characteristics of **Li**[Ni1/3Co1/3Mn1/3]O2 cathodes for **Li**-ion **batteries** by fluorination)

IT 346417-97-8, Cobalt **lithium** manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) **796966-08-0 796966-09-1**
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)
(improvement of high-voltage cycling characteristics of **Li** [Ni1/3Co1/3Mn1/3]O2 cathodes for **Li**-ion **batteries** by fluorination)

IT **796966-10-4 796966-11-5 796966-12-6**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(improvement of high-voltage cycling characteristics of **Li** [Ni1/3Co1/3Mn1/3]O2 cathodes for **Li**-ion **batteries** by fluorination)

IT **796966-08-0 796966-09-1**
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)
(improvement of high-voltage cycling characteristics of **Li** [Ni1/3Co1/3Mn1/3]O2 cathodes for **Li**-ion **batteries** by fluorination)

RN 796966-08-0 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.33LiMn0.33Ni0.33F0.05O1.95) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.95	17778-80-2
F	0.05	14762-94-8
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 796966-09-1 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.33LiMn0.33Ni0.33F0.1O1.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.9	17778-80-2
F	0.1	14762-94-8
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

IT **796966-10-4 796966-11-5 796966-12-6**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(improvement of high-voltage cycling characteristics of **Li**

[Ni1/3Co1/3Mn1/3]O2 cathodes for **Li**-ion **batteries** by fluorination)

RN 796966-10-4 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.33LiMn0.33Ni0.33F0.15O1.85) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.85	17778-80-2
F	0.15	14762-94-8
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 796966-11-5 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.33LiMn0.33Ni0.33F0.2O1.8) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.8	17778-80-2
F	0.2	14762-94-8
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 796966-12-6 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.33LiMn0.33Ni0.33F0.5O1.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.5	17778-80-2
F	0.5	14762-94-8
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 5 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:667369 HCAPLUS
DN 143:389692
TI Porous, carbon-decorated LiFePO4 prepared by sol-gel method based on citric acid
AU Gaberscek, Miran; Dominko, Robert; Bele, Marjan; Remskar, Maja; Hanzel, Darko; Jamnik, Janko
CS National Institute of Chemistry, Ljubljana, SI-1001, Slovenia
SO Solid State Ionics (2005), 176(19-22), 1801-1805
CODEN: SSIOD3; ISSN: 0167-2738
PB Elsevier B.V.
DT Journal
LA English

AB LiFePO4-C composite cathode material for lithium **batteries** was prepared The active component consists of micrometer-sized particles having pores with a large size distribution. When filled with electrolyte, the pores are responsible for supply of ions while the distance between the pores (30-150 nm) dets. the solid-state diffusion kinetics. The walls of pores are **covered** with a C **layer** which serves as an electron conductor and is thin enough (2-3 nm) to allow penetration of Li ions. The synthesis is sol-gel based with a single heating step. The electrochem. performance is the best known for LiFePO4 cathodes.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST porous iron lithium phosphate carbon composite cathode lithium **battery**

IT Secondary **batteries**
(lithium; porous carbon-LiFePO4 composite cathode material for lithium **batteries**)

IT **Battery** cathodes
Porous materials
(porous carbon-LiFePO4 composite cathode material for lithium **batteries**)

IT Sol-gel processing
(porous carbon-LiFePO4 composite cathode material prepared by sol-gel processing based on citric acid)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(porous carbon-LiFePO4 composite cathode material for lithium **batteries**)

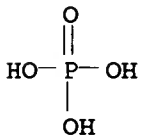
IT **15365-14-7P**, Iron lithium phosphate (FeLiPO4)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(porous carbon-LiFePO4 composite cathode material for lithium **batteries**)

IT 77-92-9, Citric acid, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(porous carbon-LiFePO4 composite cathode material prepared by sol-gel processing based on citric acid)

IT **15365-14-7P**, Iron lithium phosphate (FeLiPO4)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(porous carbon-LiFePO4 composite cathode material for lithium **batteries**)

RN 15365-14-7 HCAPLUS

CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 6 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:474801 HCAPLUS
DN 143:10617
TI Method for preparing cathode active material for rechargeable **lithium battery**
IN Park, Yong-Chul; Kim, Geun-Bae; Suh, JunWon; Jung, Won-Il
PA S. Korea
SO U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005118511	A1	20050602	US 2004-996724	20041122
	JP 2005166656	A2	20050623	JP 2004-335157	20041118
	CN 1622367	A	20050601	CN 2004-10097414	20041129
PRAI	KR 2003-86080	A	20031129		

AB Disclosed is a method of preparing a pos. active material for a rechargeable **lithium battery** including adding first and second compds. to a solvent to prepare an acidic solution with a pH from 0.01 to 3, the first compound including an element that is capable of forming a double bond with an oxygen of a **lithium** metal oxide, and the second compound including at least one element selected from the group consisting of alkali metals, alkali earth metals, group 13 elements, group 14 elements, transition metals and rare-earth elements; adding a **lithium**-containing compound to the acidic coating solution to coat the **lithium**-containing compound; and heat-treating the coated **lithium**-containing compound to form a **surface-treatment layer** comprising a compound represented by the formula MXOk where M is an element selected from the group consisting of alkali metals, alkali earth metals, group 13 elements, group 14 elements, transition metals, rare-earth elements and combinations thereof; X is an element that is capable of forming a double bond with oxygen; and k is an integer from 2 to 4.

IC ICM H01M004-52
ICS H01M004-50
INCL 429324000; 429231100; 429223000; 429231300; 429224000; 429221000; 429231600; 429231500; 429231200
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST **lithium battery** cathode active material prepn
IT Secondary **batteries**
(**lithium**; method for preparing cathode active material for rechargeable **lithium battery**)
IT **Battery** cathodes
Coating materials
(method for preparing cathode active material for rechargeable **lithium battery**)
IT Alkali metal compounds
Alkaline earth compounds
Group IIIA element compounds
Group IVA element compounds
Rare earth compounds
Transition metal compounds
RL: DEV (Device component use); USES (Uses)

(method for preparing cathode active material for rechargeable **lithium battery**)

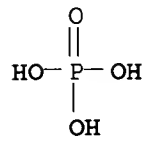
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(method for preparing cathode active material for rechargeable **lithium battery**)

IT 7429-90-5, Aluminum, uses 7783-28-0, Diammonium hydrogen phosphate 7784-27-2, Aluminum nitrate nonahydrate 12190-79-3, Cobalt **lithium** oxide (CoLiO2) 619322-75-7, Cobalt **lithium** manganese nickel oxide (Co0.1Li1.03Mn0.1Ni0.8O2)
RL: DEV (Device component use); USES (Uses)
(method for preparing cathode active material for rechargeable **lithium battery**)

IT 7440-44-0, Carbon, uses **7784-30-7**, Aluminum phosphate alpo4 24937-79-9, Pvdf
RL: TEM (Technical or engineered material use); USES (Uses)
(method for preparing cathode active material for rechargeable **lithium battery**)

IT **7784-30-7**, Aluminum phosphate alpo4
RL: TEM (Technical or engineered material use); USES (Uses)
(method for preparing cathode active material for rechargeable **lithium battery**)

RN 7784-30-7 HCAPLUS
CN Phosphoric acid, aluminum salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Al

L44 ANSWER 7 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:1126870 HCAPLUS
DN 142:59755
TI Method for the synthesis of surface-modified materials
IN Besenhard, Jurgen Otto; Wachtler, Mario; Han, Joong-hee; Basch, Angelika
PA Austria
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2004258836	A1	20041223	US 2003-602251	20030623
PRAI US 2003-602251		20030623		

AB Disclosed is a method for producing surface-modified materials, such as core-shell materials with the core and the shell(s) being different distinct phases, or materials with a concentration gradient of one or more dopant or substituent element(s) from the surface to the bulk. The method comprises (i) treating the bulk of material with a solution containing a first solvent and at least one flocculant comprising a soluble polymer so that the

flocculant adheres to the bulk; (ii) subsequently contacting the flocculant-treated bulk of step (i) with a dispersion containing a second solvent and the particulate solid particles to deposit the particulate solid particles on the flocculant-treated bulk ; and (iii) subsequently treating the resultant of step (ii) with heat. This method can in particular be applied to produce surface-modified cathode materials for **Li batteries** with improved performance.

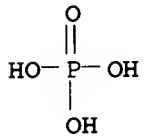
IC ICM B05D003-02
INCL 427180000; 427213000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
ST **battery** cathode surface modified material synthesis; fuel cell electrode surface modified material synthesis; capacitor electrode surface modified material synthesis
IT Phosphates, uses
Phosphites
Sulfates, uses
RL: MOA (Modifier or additive use); USES (Uses)
(hydrogen; method for synthesis of surface-modified materials)
IT **Battery** cathodes
Capacitor electrodes
Flocculants
Fuel cell electrodes
Heat treatment
Polyelectrolytes
Surface treatment
(method for synthesis of surface-modified materials)
IT Betaines
Bicarbonates
Bisulfites
Hydroxides (inorganic)
Oxides (inorganic), uses
Polysaccharides, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method for synthesis of surface-modified materials)
IT Solvents
(nonaq., polar; method for synthesis of surface-modified materials)
IT Alcohols, uses
Esters, uses
Ethers, uses
Ketones, uses
Lactams
Sulfoxides
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; method for synthesis of surface-modified materials)
IT Proteins
RL: MOA (Modifier or additive use); USES (Uses)
(water-soluble; method for synthesis of surface-modified materials)
IT 409-21-2, Silicon carbide (SiC), uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method for synthesis of surface-modified materials)
IT 1308-06-1, Cobalt oxide (Co3O4) 12057-17-9, **Lithium** manganese oxide (LiMn2O4) **15365-14-7**, Iron **lithium** phosphate felipo4 131344-56-4, Cobalt **lithium** nickel oxide 135573-53-4, Cobalt **lithium** nickel oxide Co0-1LiNi0-1O2
RL: **DEV (Device component use)**; USES (Uses)
(method for synthesis of surface-modified materials)
IT 554-13-2, **Lithium** carbonate 1305-78-8, Calcia Cao, uses 1309-48-4, Magnesium oxide (MgO), uses 1312-43-2, Indium oxide (In2O3)

1312-81-8, Lanthanum oxide (La2O3) 1314-11-0, Strontium oxide (SrO), uses 1314-13-2, Zinc oxide (ZnO), uses 1314-23-4, Zirconia, uses 1314-36-9, Yttrium oxide (Y2O3), uses 1344-28-1, Alumina, uses 7727-43-7, Barium sulfate baso4 12003-67-7, Aluminum **lithium** oxide allio2 12031-65-1, **Lithium** nickel oxide (LiNiO2) 12031-82-2, **Lithium** titanium oxide (Li2TiO3) 12047-27-7, Barium titanium oxide (BaTiO3), uses 12049-50-2, Calcium titanium oxide (CaTiO3) 12057-24-8, **Lithium** oxide (Li2O), uses 12190-79-3, Cobalt **lithium** oxide (CoLiO2) 13463-67-7, Titania, uses 18282-10-5, Tin dioxide
RL: MOA (Modifier or additive use); USES (Uses)
(method for synthesis of surface-modified materials)

IT 7732-18-5, Water, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; method for synthesis of surface-modified materials)

IT **15365-14-7**, Iron **lithium** phosphate felipo4
RL: **DEV (Device component use)**; USES (Uses)
(method for synthesis of surface-modified materials)

RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

L44 ANSWER 8 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:1081208 HCAPLUS
DN 142:41556
TI Aliovalent anion protective layers for active metal anodes
IN De Jonghe, Lutgard; Nimon, Yevgeniy S.; Visco, Steven J.
PA Polyplus Battery Company, USA
SO PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2004109823	A1	20041216	WO 2004-US17646	20040604

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,

AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 2004253510 A1 20041216 US 2004-861336 20040603
EP 1629552 A1 20060301 EP 2004-776270 20040604
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

PRAI US 2003-476143P P 20030604
US 2003-482997P P 20030627
US 2004-861336 A 20040603
WO 2004-US17646 W 20040604

AB Active metal anodes can be protected from deleterious reaction and voltage delay in an active metal anode-solid cathode **battery** cell, and damage to the anode can be significantly reduced or completely alleviated by coating the active metal anode (e.g., **Li**) surface with a thin layer of a chemical protective layer incorporating aliovalent (multivalent) anions on the **lithium** metal surface. Such an aliovalent surface layer is conductive to **Li**-ions but can protect **lithium** metal from reacting with oxygen, nitrogen or moisture in ambient atmospheric thereby allowing the **lithium** material to be handled outside of a controlled atmospheric, such as a dry room. Particularly, preferred examples of such protective layers include mixts. or solid solns. of **lithium** phosphate, **lithium** metaphosphate, and/or **lithium** sulfate. These protective layers can be formed on the **Li** **surface** by **treatment** with diluted solns. of the following acids: H3PO4, HPO3 and H2SO4 or their acidic salts in a dry organic solvent compatible with **Li** by various techniques. Such chemical protection of the **Li** or other active metal electrode significantly enhances active metal electrode protection and reduces the voltage delay due to protected anode's improved stability toward the electrolyte.

IC ICM H01M004-04
ICS H01M004-02; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST **battery** anode aliovalent anion protective layer coating

IT Phosphates, uses
Sulfates, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(active metal; aliovalent anion protective layers for active metal anodes)

IT **Battery** anodes
Coating materials
(aliovalent anion protective layers for active metal anodes)

IT Alkali metals, uses
Alkaline earth metals
Oxides (inorganic), uses
Sulfides, uses
RL: DEV (Device component use); USES (Uses)
(aliovalent anion protective layers for active metal anodes)

IT Alloys, uses
RL: DEV (Device component use); USES (Uses)
(alkaline earth; aliovalent anion protective layers for active metal anodes)

IT Alloys, uses
RL: DEV (Device component use); USES (Uses)
(alkali metal; aliovalent anion protective layers for active metal anodes)

IT Alkali metals, uses

Alkaline earth metals
RL: DEV (Device component use); USES (Uses)
(alloys; aliovalent anion protective layers for active metal anodes)

IT Primary **batteries**
Secondary **batteries**
(**lithium**; aliovalent anion protective layers for active metal anodes)

IT Phosphates, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(metaphosphates, active metal; aliovalent anion protective layers for active metal anodes)

IT Halides
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(oxyhalides, liquid; aliovalent anion protective layers for active metal anodes)

IT 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 1313-13-9, Manganese dioxide, uses 1313-27-5, Molybdenum oxide (MoO3), uses 1317-37-9, Iron sulfide (FeS) 1317-38-0, Copper oxide (CuO), uses 1317-40-4, Copper sulfide (CuS) **7439-93-2**, **Lithium**, uses 7439-95-4, Magnesium, uses 7440-09-7, Potassium, uses 7440-23-5, Sodium, uses 7440-39-3, Barium, uses 7440-41-7, Beryllium, uses 7440-70-2, Calcium, uses 7704-34-9, Sulfur, uses 7719-09-7, Thionyl chloride 7784-01-2, Silver chromate 7791-03-9, **Lithium** perchlorate 11105-02-5, Silver vanadium oxide 12039-13-3, Titanium sulfide (TiS2) 12068-85-8, Iron sulfide (FeS2) 14283-07-9, **Lithium** tetrafluoroborate **15365-14-7**, Iron **lithium** phosphate felipo4 21324-40-3, **Lithium** hexafluorophosphate 29935-35-1, **Lithium** hexafluoroarsenate 39300-70-4, **Lithium** nickel oxide 39457-42-6, **Lithium** manganese oxide 52627-24-4, Cobalt **lithium** oxide 74432-42-1, **Lithium** polysulfide 90076-65-6, Litfsi
RL: **DEV (Device component use)**; USES (Uses)
(aliovalent anion protective layers for active metal anodes)

IT 7664-93-9, Sulfuric acid, uses 13453-86-6, **Lithium** hydrogen sulfate
RL: MOA (Modifier or additive use); USES (Uses)
(aliovalent anion protective layers for active metal anodes)

IT 7664-38-2, Phosphoric acid, uses 10343-62-1, MetaPhosphoric acid 14066-19-4, Hydrogen phosphate, uses 14066-20-7, Dihydrogen phosphate, uses
RL: MOA (Modifier or additive use); USES (Uses)
(film forming additive; aliovalent anion protective layers for active metal anodes)

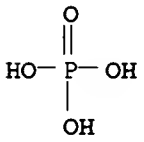
IT 10377-48-7, **Lithium** sulfate 10377-52-3, **Lithium** phosphate
RL: TEM (Technical or engineered material use); USES (Uses)
(protective layer; aliovalent anion protective layers for active metal anodes)

IT **7439-93-2**, **Lithium**, uses **15365-14-7**, Iron **lithium** phosphate felipo4
RL: **DEV (Device component use)**; USES (Uses)
(aliovalent anion protective layers for active metal anodes)

RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 9 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:999659 HCAPLUS
DN 141:413676
TI Method for **surface treatment** of **lithium** manganese oxide for cathode in **lithium** secondary **battery**
IN Lee, Jai Young; Park, Sung Chul; Han, Young Soo; Kang, Youn Seon; Kang, Yong Mook; Han, Sang Cheol
PA S. Korea
SO U.S. Pat. Appl. Publ., 11 pp., Cont.-in-part of U.S. Ser. No. 731,017.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004228965	A1	20041118	US 2004-868881	20040617
	US 2001031311	A1	20011018	US 2000-731017	20001207
PRAI	US 2000-731017	B2	20001207		
	KR 2000-20158	A	20000417		

AB A method for **surface treatment** of **lithium** manganese oxide for pos. electrodes in **lithium** secondary **batteries** is provided in which the surface of the **lithium** manganese oxide is coated with **lithium** transition metal oxides. The **lithium** secondary **batteries** using the coated **lithium** manganese oxide as an anode material not only solves the problems with the conventional **lithium** secondary **batteries** in regard to the lifetime of the electrodes at high temperature and the fast discharge efficiency, but also replace the conventional expensive **lithium** cobalt oxide to reduce the production cost.
IC ICM B05D005-12
ICS H01M004-50
INCL 427126300; 429231100; 429224000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST **surface treatment lithium** manganese oxide cathode secondary **battery**

IT Transition metal oxides
RL: TEM (Technical or engineered material use); USES (Uses)
(**lithium**-containing, coating; method for **surface treatment** of **lithium** manganese oxide for cathode in **lithium** secondary **battery**)

IT Secondary **batteries**
(**lithium**; method for **surface treatment** of **lithium** manganese oxide for cathode in **lithium** secondary **battery**)

IT **Battery** cathodes
Coating materials
Surface treatment
(method for **surface treatment** of **lithium** manganese oxide for cathode in **lithium** secondary **battery**)

IT 12031-65-1, **Lithium** nickel oxide (LiNiO2) 12190-79-3, Cobalt **lithium** oxide (CoLiO2) 120062-99-9, Cobalt copper **lithium** nickel oxide 135573-53-4, Cobalt **lithium** nickel oxide co0-1lini0-1o2 182442-94-0, Cobalt **lithium** nickel vanadium oxide 182442-95-1, Cobalt **lithium** manganese nickel oxide 182442-96-2, Cobalt iron **lithium** nickel oxide 204451-09-2, Chromium **lithium** manganese oxide (Cr0-0.5LiMn1.5-2O4) 244304-20-9, Cobalt **lithium** nickel titanium oxide 244304-21-0, Chromium cobalt **lithium** nickel oxide 244304-25-4, Cobalt **lithium** molybdenum nickel oxide **252568-41-5**, Cobalt **lithium** nickel tungsten oxide 252568-42-6, Cobalt **lithium** nickel tantalum oxide 637003-44-2, Copper **lithium** manganese oxide (Cu0-0.5LiMn1.5-2O4) 792913-31-6, Iron **lithium** manganese oxide (Fe0-0.5LiMn1.5-2O4) 792913-32-7, **Lithium** manganese vanadium oxide (LiMn1.5-2V0-0.5O4) 792913-34-9, **Lithium** manganese titanium oxide (LiMn1.5-2Ti0-0.5O4) **792913-35-0**, **Lithium** manganese tungsten oxide (LiMn1.5-2W0-0.5O4) 792913-36-1, **Lithium** manganese tantalum oxide (LiMn1.5-2Ta0-0.5O4) 792913-37-2, **Lithium** manganese molybdenum oxide (LiMn1.5-2Mo0-0.5O4)
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method for **surface treatment** of **lithium** manganese oxide for cathode in **lithium** secondary **battery**)

IT 71-48-7, Cobalt acetate 373-02-4, Nickel acetate 546-89-4, **Lithium** acetate 1834-30-6, Ferric acetate 2180-18-9, Manganese acetate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method for **surface treatment** of **lithium** manganese oxide for cathode in **lithium** secondary **battery**)

IT 12057-17-9, **Lithium** manganese oxide (LiMn2O4)
RL: DEV (Device component use); USES (Uses)
(method for **surface treatment** of **lithium** manganese oxide for cathode in **lithium** secondary **battery**)

IT 39457-42-6, **Lithium** manganese oxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(method for **surface treatment** of **lithium** manganese oxide for cathode in **lithium** secondary **battery**)

IT **252568-41-5**, Cobalt **lithium** nickel tungsten oxide

792913-35-0, Lithium manganese tungsten oxide (LiMn1.5-2W0-0.5O4)
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method for **surface treatment** of **lithium** manganese oxide for cathode in **lithium** secondary **battery**)
RN 252568-41-5 HCAPLUS
CN Cobalt lithium nickel tungsten oxide (9CI) (CA INDEX NAME)

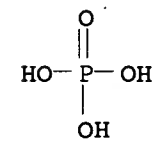
Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
W	x	7440-33-7
Ni	x	7440-02-0
Li	x	7439-93-2

RN 792913-35-0 HCAPLUS
CN Lithium manganese tungsten oxide (LiMn1.5-2W0-0.5O4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
W	0 - 0.5	7440-33-7
Mn	1.5 - 2	7439-96-5
Li	1	7439-93-2

L44 ANSWER 10 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:874818 HCAPLUS
DN 142:286929
TI Influence of potential of phosphate treatment of aluminum matrix on cycling of the Alph-La-electrode in the aprotic organic solution
AU Apalikova, L. E.; Klyuev, V. V.; Popova, S. S.
CS Tekhnol. Inst., Sarat. Gos. Tekh. Univ., Saratov, Russia
SO Izvestiya Vysshikh Uchebnykh Zavedenii, Khimiya i Khimicheskaya Tekhnologiya (2004), 47(4), 111-114
CODEN: IVUKAR; ISSN: 0579-2991
PB Ivanovskii Gosudarstvennyi Khimiko-Tekhnologicheskii Universitet
DT Journal
LA Russian
AB It was shown that the presence of phosphate layer on the surface of aluminum electrode does not prevent the processes of cathodic incorporation followed by anodic dissoln. of lanthanum and **lithium** . Duration of charge-discharge cycle and cycling of electrodes by **lithium** depends on preliminary phosphate treatment. Assumption is made that it is associated with the change in the structure of phosphate layer.
CC 72-7 (Electrochemistry)
Section cross-reference(s): **52**, 56
ST phosphate treatment aluminum matrix lanthanum electrodeposition **lithium battery**
IT Electrodeposits
(anodic; formation by anodization of aluminum in solution containing Na3PO4)
IT Electric potential
Surface treatment
(influence of potential of phosphate treatment of aluminum matrix on

cycling of Alph-La-electrode in aprotic organic solution)
IT Secondary **batteries**
(**lithium**; influence of potential of phosphate treatment of aluminum matrix on cycling of Alph-La-electrode in aprotic organic solution in relation to)
IT Electrodeposition
(of La in anodic phosphate film on aluminum, in propylene carbonate/DMF containing LiClO4)
IT Open circuit potential
(of aluminum after polarization in solution containing Na3PO4 and after cathodic introducing of La in anodic phosphate film)
IT Anodic polarization
Anodization
(of aluminum in solution containing Na3PO4)
IT Solvents
(organic, aprotic; influence of potential of phosphate treatment of aluminum matrix on cycling of Alph-La-electrode in aprotic organic solution)
IT Coating process
(phosphating; influence of potential of phosphate treatment of aluminum matrix on cycling of Alph-La-electrode in aprotic organic solution)
IT **7601-54-9**, Trisodium phosphate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(anodization of aluminum in solution containing Na3PO4)
IT 68-12-2, DMF, uses 108-32-7, Propylene carbonate
RL: NUU (Other use, unclassified); USES (Uses)
(electrodeposition of La in anodic phosphate film on aluminum, in propylene carbonate/DMF containing LiClO4)
IT 10099-58-8, Lanthanum trichloride
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrodeposition of La in anodic phosphate film on aluminum, in propylene carbonate/DMF containing LiClO4 in presence of)
IT **7601-54-9**, Trisodium phosphate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(anodization of aluminum in solution containing Na3PO4)
RN 7601-54-9 HCAPLUS
CN Phosphoric acid, trisodium salt (8CI, 9CI) (CA INDEX NAME)



●3 Na

L44 ANSWER 11 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:650267 HCAPLUS
DN 141:193000
TI Positive electrode material for secondary **battery**, process for producing the same and secondary **battery**
IN Hatta, Naoki; Inaba, Toshikazu; Uchiyama, Izumi
PA Mitsui Engineering & Shipbuilding Co., Ltd., Japan; Research Institute of

Innovative Technology for the Earth
SO PCT Int. Appl., 74 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2004068620	A1	20040812	WO 2004-JP919	20040130
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI				
CA 2514528	AA	20040812	CA 2004-2514528	20040130
EP 1603177	A1	20051207	EP 2004-706803	20040130
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
PRAI JP 2003-24454	A	20030131		
WO 2004-JP919	W	20040130		

AB A pos. electrode material for secondary **battery** comprises as a main component a pos. electrode active substance of the general formula LinFePO4 (wherein n is a number of 0 to 1) and Mo. The Mo is complexed with the pos. electrode active substance LinFePO4. In a preferred form of the pos. electrode material, the pos. electrode material on its surface has deposits of conductive carbon. The method for preparation of anode active material as well as **batteries** prepared with the anode active materials are also disclosed.

IC ICM H01M004-58
ICS H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST **lithium** iron molybdenum phosphate **battery** anode active material
IT **Battery** anodes
(secondary; **lithium** iron molybdenum phosphate type **battery** anode active substances for)
IT 7440-44-0, Carbon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**lithium** iron molybdenum phosphate type **battery** anode active substance **surface-treated** with particles of)
IT **737008-16-1P**, Iron **lithium** molybdenum oxide phosphate (Fe1.02Li0.98Mo0.02O0.73(PO4)) **737008-17-2P**, Iron **lithium** molybdenum oxide phosphate (Fe1.08Li1.03Mo0.01O0.44(PO4)) **737008-18-3P 737008-19-4P 737008-20-7P 737008-21-8P**
RL: **DEV (Device component use)**; PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(secondary **battery** anode-active substance)
IT **737008-16-1P**, Iron **lithium** molybdenum oxide phosphate (Fe1.02Li0.98Mo0.02O0.73(PO4)) **737008-17-2P**, Iron **lithium** molybdenum oxide phosphate (Fe1.08Li1.03Mo0.01O0.44(PO4)) **737008-18-3P 737008-19-4P 737008-20-7P 737008-21-8P**
RL: **DEV (Device component use)**; PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(secondary **battery** anode-active substance)
RN 737008-16-1 HCAPLUS
CN Iron lithium molybdenum oxide phosphate (Fe1.02Li0.98Mo0.02O0.73(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.73	17778-80-2
O4P	1	14265-44-2
Mo	0.02	7439-98-7
Li	0.98	7439-93-2
Fe	1.02	7439-89-6

RN 737008-17-2 HCAPLUS
CN Iron lithium molybdenum oxide phosphate (Fe1.08Li1.03Mo0.01O0.44(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.44	17778-80-2
O4P	1	14265-44-2
Mo	0.01	7439-98-7
Li	1.03	7439-93-2
Fe	1.08	7439-89-6

RN 737008-18-3 HCAPLUS
CN Iron lithium molybdenum metaphosphate oxide (Fe1.01Li1.01Mo0.04(PO3)O0.94) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.94	17778-80-2
O3P	1	15389-19-2
Mo	0.04	7439-98-7
Li	1.01	7439-93-2
Fe	1.01	7439-89-6

RN 737008-19-4 HCAPLUS
CN Iron lithium molybdenum metaphosphate oxide (Fe1.01Li0.95Mo0.04(PO3)O0.96) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.96	17778-80-2
O3P	1	15389-19-2
Mo	0.04	7439-98-7
Li	0.95	7439-93-2
Fe	1.01	7439-89-6

RN 737008-20-7 HCAPLUS
CN Iron lithium molybdenum metaphosphate oxide (Fe0.95Li0.99Mo0.05(PO3)O0.95) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.95	17778-80-2
O3P	1	15389-19-2
Mo	0.05	7439-98-7
Li	0.99	7439-93-2

Fe	0.95	7439-89-6

RN 737008-21-8 HCAPLUS
CN Iron lithium molybdenum metaphosphate oxide (Fe1.05Li1.05Mo0.05(PO3)O0.96) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.96	17778-80-2
O3P	1	15389-19-2
Mo	0.05	7439-98-7
Li	1.05	7439-93-2
Fe	1.05	7439-89-6

L44 ANSWER 12 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:481781 HCAPLUS
DN 141:9733
TI Method of preparation of cathode material for **lithium** secondary **batteries**
IN Kweon, Ho-jin; Jung, Hyun-sook; Kim, Geun-bae; Park, Dong-gon
PA Samsung SDI Co., Ltd., S. Korea
SO U.S., 8 pp., Cont.-in-part of U.S. 6,372,385.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6749965	B1	20040615	US 2000-595075	20000616
	US 6372385	B1	20020416	US 1999-248202	19990210
	KR 2001002784	A	20010115	KR 1999-22765	19990617
	US 2002061444	A1	20020523	US 2002-41921	20020107
	US 6783890	B2	20040831		
PRAI	US 1999-248202	A2	19990210		
	KR 1999-22765	A	19990617		
	KR 1998-3755	A	19980210		
	KR 1998-12005	A	19980406		
	KR 1998-42956	A	19981014		

AB Disclosed is a pos. active material for a **lithium** secondary **battery** having high capacity and long durability properties and particularly to a powder of LiaNi1-x-yC OxMyO2, LiaNi1-x-yC OxMyO2-zFz or LiaNi1-x-yC OxMyO2-zSz (where M is a metal selected from the group consisting of Al, Mg, Sr, La, Ce, V, and Ti and wherein $0 \leq x < 0.99$, $0.01 \leq y \leq 0.1$, $0.01 \leq z \leq 0.1$, and $1.00 \leq a \leq 1.1$) is **surface-treated** by a metal alkoxide solution whereby the durability, capacity and structural safety of the pos. active material is increased.
IC ICM H01M004-40
ICS H01M004-52
INCL 429231100; 429231300; 429231500; 429223000; 429231600
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST cathode material prepn **lithium** secondary **battery**; safety cathode material prepn **lithium** secondary **battery**
IT Coating process
(dip; method of preparation of cathode material for **lithium** secondary **batteries**)

IT Secondary **batteries**
(**lithium**; method of preparation of cathode material for **lithium** secondary **batteries**)
IT **Battery** cathodes
(method of preparation of cathode material for **lithium** secondary **batteries**)
IT 1303-86-2, Boron oxide, uses 1305-78-8, Calcium oxide, uses 1309-48-4, Magnesium oxide, uses 1313-59-3, Sodium oxide, uses 1344-28-1, Aluminum oxide, uses 7631-86-9, Silicon oxide, uses 11099-11-9, Vanadium oxide 11104-61-3, Cobalt oxide 12136-45-7, Potassium oxide, uses 13463-67-7, Titanium oxide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method of preparation of cathode material for **lithium** secondary **batteries**)
IT **320623-81-2P**, Cobalt lanthanum **lithium** nickel fluoride oxide Co0.1La0.01Li1.02Ni0.89F0.05O1.95 **320623-85-6P**, Cobalt **lithium** magnesium nickel fluoride oxide Co0.1Li1.02Mg0.01Ni0.89F0.05O1.95
RL: **DEV (Device component use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(method of preparation of cathode material for **lithium** secondary **batteries**)
IT **320623-81-2P**, Cobalt lanthanum **lithium** nickel fluoride oxide Co0.1La0.01Li1.02Ni0.89F0.05O1.95 **320623-85-6P**, Cobalt **lithium** magnesium nickel fluoride oxide Co0.1Li1.02Mg0.01Ni0.89F0.05O1.95
RL: **DEV (Device component use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(method of preparation of cathode material for **lithium** secondary **batteries**)
RN 320623-81-2 HCAPLUS
CN Cobalt lanthanum lithium nickel fluoride oxide (Co0.1La0.01Li1.02Ni0.89F0.05O1.95) (9CI) (CA INDEX NAME)

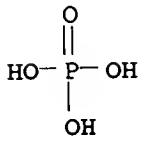
Component	Ratio	Component Registry Number
O	1.95	17778-80-2
F	0.05	14762-94-8
Co	0.1	7440-48-4
Ni	0.89	7440-02-0
Li	1.02	7439-93-2
La	0.01	7439-91-0

RN 320623-85-6 HCAPLUS
CN Cobalt lithium magnesium nickel fluoride oxide (Co0.1Li1.02Mg0.01Ni0.89F0.05O1.95) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.95	17778-80-2
F	0.05	14762-94-8
Co	0.1	7440-48-4
Ni	0.89	7440-02-0
Mg	0.01	7439-95-4
Li	1.02	7439-93-2

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 13 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:413656 HCAPLUS
DN 141:56984
TI Improving cyclability of 5V cathodes by electrochemical surface modification
AU Eftekhari, Ali
CS Electrochemical Research Center, Tehran, Iran
SO Chemistry Letters (2004), 33(5), 616-617
CODEN: CMLTAG; ISSN: 0366-7022
PB Chemical Society of Japan
DT Journal
LA English
AB A simple electrochem. procedure is proposed for surface modification of cathode materials. A metal oxide retaining layer, deposited electrochem. on the electroactive material, prevents direct contact with the electrolyte. For 5V cathodes, which are oxidation agents when charged , this action significantly enhances cyclability. The stability of the metal oxide retaining layer deposited on the cathode surface has a significant effect on the cyclability. This effect can be enhanced by inducing a centrifugal force during electrodeposition of the layer.
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST **lithium battery** cathode alumina **surface treatment** electrodeposition
IT **Battery** cathodes
Surface treatment
(improving cyclability of cathodes for **lithium batteries** by electrochem. surface modification)
IT Secondary **batteries**
(**lithium**; improving cyclability of cathodes for **lithium batteries** by electrochem. surface modification)
IT 12031-75-3, **Lithium** manganese nickel oxide (LiMn1.5Ni0.5O4)
13824-63-0, Cobalt **lithium** phosphate (CoLiPO4)
106389-48-4, Iron **lithium** manganese oxide (FeLi2Mn3O8)
RL: **DEV (Device component use)**; USES (Uses)
(alumina-coated, cathode; improving cyclability of cathodes for **lithium batteries** by electrochem. surface modification)
IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(cathode material coated with; improving cyclability of cathodes for **lithium batteries** by electrochem. surface modification)
IT **13824-63-0**, Cobalt **lithium** phosphate (CoLiPO4)
RL: **DEV (Device component use)**; USES (Uses)
(alumina-coated, cathode; improving cyclability of cathodes for **lithium batteries** by electrochem. surface modification)
RN 13824-63-0 HCAPLUS
CN Phosphoric acid, cobalt(2+) lithium salt (8CI, 9CI) (CA INDEX NAME)



● Co(II)

● Li

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 14 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:392154 HCAPLUS
DN 140:393378
TI Layered cathode materials for **lithium** ion rechargeable **batteries**
IN Kang, Sun-ho; Amine, Khalil
PA The University of Chicago, USA
SO U.S. Pat. Appl. Publ., 24 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004091779	A1	20040513	US 2003-699484	20031031
	US 2005058588	A1	20050317	US 2004-903514	20040730
PRAI	US 2002-423347P	P	20021101		
	US 2003-699484	A2	20031031		

AB A number of materials are disclosed with the composition $Li1+xNi_{\alpha}Mn_{\beta}Co_{\gamma}M'_{\delta}O2-zFz$ (M' = Mg,Zn,Al,Ga,B,Zr,Ti) for use with rechargeable **batteries**, wherein x is between about 0 and 0.3, α is between about 0.2 and 0.6, β is between about 0.2 and 0.6, γ is between about 0 and 0.3, δ is between about 0 and 0.15, and z is between about 0 and 0.2. Adding the above metal and fluorine dopants affects capacity, impedance, and stability of the layered oxide structure during electrochem. cycling.
IC ICM H01M004-52
ICS H01M004-50; C01G045-12; C01G051-04; C01G053-04
INCL 429231100; 429223000; 429231600; 429224000; 429231300; 423594400; 423594600; 423599000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST layered cathode material **lithium** rechargeable **battery**
IT **Battery** cathodes
Calcination
Heat **treatment**
Sol-gel processing
Solid state reaction
(**layered** cathode materials for **lithium** ion rechargeable **batteries**)

IT Materials
(layered; layered cathode materials for **lithium** ion rechargeable **batteries**)

IT Secondary **batteries**
(**lithium**; layered cathode materials for **lithium** ion rechargeable **batteries**)

IT 7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-28-0, Thallium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; layered cathode materials for **lithium** ion rechargeable **batteries**)

IT 373-02-4, Nickel acetate 546-89-4, **Lithium** acetate 555-31-7, Aluminum isopropoxide 1184-55-0, Zinc methoxide 1309-42-8, Magnesium hydroxide 1310-65-2, **Lithium** hydroxide 2180-18-9, Manganese acetate 5931-89-5, Cobalt acetate 7779-88-6, Zinc nitrate 7789-24-4, **Lithium** fluoride, processes 10377-60-3, Magnesium nitrate 12023-99-3, Gallium hydroxide 12054-48-7, Nickel hydroxide 12672-51-4, Cobalt hydroxide 13473-90-0, Aluminum nitrate 13494-90-1, Gallium nitrate 20427-58-1, Zinc hydroxide 21645-51-2, Aluminum hydroxide, processes 38218-24-5, Indium isopropoxide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(layered cathode materials for **lithium** ion rechargeable **batteries**)

IT 128975-24-6, **Lithium** manganese nickel oxide LiMn0.5Ni0,5O2
685867-50-9, **Lithium** manganese nickel fluoride oxide (Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.5O1.5-2) **685867-51-0**
685867-52-1 **685867-54-3** **685867-55-4**
685867-56-5 **685867-57-6** **685867-58-7**,
Lithium manganese nickel fluoride oxide (LiMn0.48Ni0.52F0.05O1.95)
685867-60-1, **Lithium** manganese nickel fluoride oxide (LiMn0.49Ni0.51F0.02O1.98) **685867-61-2**, **Lithium** manganese nickel fluoride oxide (LiMn0.5Ni0.5F0.01O1.99) 685867-62-3, Cobalt **lithium** manganese nickel oxide (Co0.1Li1.2Mn0.55Ni0.15O2)
685867-63-4 **685867-64-5** **685867-66-7**
RL: **DEV (Device component use)**; USES (Uses)
(layered cathode materials for **lithium** ion rechargeable **batteries**)

IT **685867-50-9**, **Lithium** manganese nickel fluoride oxide (Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.5O1.5-2) **685867-51-0**
685867-52-1 **685867-54-3** **685867-55-4**
685867-56-5 **685867-57-6** **685867-58-7**,
Lithium manganese nickel fluoride oxide (LiMn0.48Ni0.52F0.05O1.95)
685867-60-1, **Lithium** manganese nickel fluoride oxide (LiMn0.49Ni0.51F0.02O1.98) **685867-61-2**, **Lithium** manganese nickel fluoride oxide (LiMn0.5Ni0.5F0.01O1.99)
685867-63-4 **685867-64-5** **685867-66-7**
RL: **DEV (Device component use)**; USES (Uses)
(layered cathode materials for **lithium** ion rechargeable **batteries**)

RN 685867-50-9 HCAPLUS
CN Lithium manganese nickel fluoride oxide (Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	1.5 - 2	17778-80-2
F	0 - 0.5	14762-94-8
Ni	0.2 - 0.6	7440-02-0
Mn	0.2 - 0.67	7439-96-5
Li	1 - 1.33	7439-93-2

RN 685867-51-0 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.01-0.33Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.5 - 2	17778-80-2
F	0 - 0.5	14762-94-8
Co	0.01 - 0.33	7440-48-4
Ni	0.2 - 0.6	7440-02-0
Mn	0.2 - 0.67	7439-96-5
Li	1 - 1.33	7439-93-2

RN 685867-52-1 HCAPLUS
CN Aluminum lithium manganese nickel fluoride oxide (Al0.01-0.2Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.5 - 2	17778-80-2
F	0 - 0.5	14762-94-8
Ni	0.2 - 0.6	7440-02-0
Mn	0.2 - 0.67	7439-96-5
Li	1 - 1.33	7439-93-2
Al	0.01 - 0.2	7429-90-5

RN 685867-54-3 HCAPLUS
CN Lithium manganese nickel titanium fluoride oxide (Li1-1.33Mn0.2-0.67Ni0.2-0.6Ti0.01-0.2F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.5 - 2	17778-80-2
F	0 - 0.5	14762-94-8
Ti	0.01 - 0.2	7440-32-6
Ni	0.2 - 0.6	7440-02-0
Mn	0.2 - 0.67	7439-96-5
Li	1 - 1.33	7439-93-2

RN 685867-55-4 HCAPLUS
CN Aluminum cobalt Lithium manganese nickel fluoride oxide (Al0.01-0.2Co0.01-0.33Li1-1.33Mn0.2-0.67Ni0.2-0.6F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.5 - 2	17778-80-2
F	0 - 0.5	14762-94-8
Co	0.01 - 0.33	7440-48-4
Ni	0.2 - 0.6	7440-02-0

Mn	0.2 - 0.67	7439-96-5
Li	1 - 1.33	7439-93-2
Al	0.01 - 0.2	7429-90-5

RN 685867-56-5 HCAPLUS
CN Cobalt lithium manganese nickel titanium fluoride oxide (Co0.01-0.33Li1-1.33Mn0.2-0.67Ni0.2-0.6Ti0.01-0.2F0-0.5O1.5-2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.5 - 2	17778-80-2
F	0 - 0.5	14762-94-8
Co	0.01 - 0.33	7440-48-4
Ti	0.01 - 0.2	7440-32-6
Ni	0.2 - 0.6	7440-02-0
Mn	0.2 - 0.67	7439-96-5
Li	1 - 1.33	7439-93-2

RN 685867-57-6 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.2LiMn0.38Ni0.42F0.05O1.95) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.95	17778-80-2
F	0.05	14762-94-8
Co	0.2	7440-48-4
Ni	0.42	7440-02-0
Mn	0.38	7439-96-5
Li	1	7439-93-2

RN 685867-58-7 HCAPLUS
CN Lithium manganese nickel fluoride oxide (LiMn0.48Ni0.52F0.05O1.95) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.95	17778-80-2
F	0.05	14762-94-8
Ni	0.52	7440-02-0
Mn	0.48	7439-96-5
Li	1	7439-93-2

RN 685867-60-1 HCAPLUS
CN Lithium manganese nickel fluoride oxide (LiMn0.49Ni0.51F0.02O1.98) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.98	17778-80-2
F	0.02	14762-94-8
Ni	0.51	7440-02-0
Mn	0.49	7439-96-5
Li	1	7439-93-2

RN 685867-61-2 HCAPLUS
CN Lithium manganese nickel fluoride oxide (LiMn0.5Ni0.5F0.01O1.99) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.99	17778-80-2
F	0.01	14762-94-8
Ni	0.5	7440-02-0
Mn	0.5	7439-96-5
Li	1	7439-93-2

RN 685867-63-4 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.1Li1.2Mn0.54Ni0.16F0.02O1.98) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.98	17778-80-2
F	0.02	14762-94-8
Co	0.1	7440-48-4
Ni	0.16	7440-02-0
Mn	0.54	7439-96-5
Li	1.2	7439-93-2

RN 685867-64-5 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.1Li1.2Mn0.52Ni0.18F0.05O1.95) (9CI) (CA INDEX NAME)

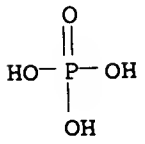
Component	Ratio	Component Registry Number
O	1.95	17778-80-2
F	0.05	14762-94-8
Co	0.1	7440-48-4
Ni	0.18	7440-02-0
Mn	0.52	7439-96-5
Li	1.2	7439-93-2

RN 685867-66-7 HCAPLUS
CN Cobalt lithium manganese nickel fluoride oxide (Co0.1Li1.2Mn0.5Ni0.2F0.1O1.9) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.9	17778-80-2
F	0.1	14762-94-8
Co	0.1	7440-48-4
Ni	0.2	7440-02-0
Mn	0.5	7439-96-5
Li	1.2	7439-93-2

L44 ANSWER 15 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:959913 HCAPLUS
DN 140:306587
TI Surface modification by silver coating for improving electrochemical

properties of LiFePO4
AU Park, K. S.; Son, J. T.; Chung, H. T.; Kim, S. J.; Lee, C. H.; Kang, K. T.; Kim, H. G.
CS Department of Materials Science and Engineering, KAIST, Daejeon, 305701, S. Korea
SO Solid State Communications (2004), 129(5), 311-314
CODEN: SSCOA4; ISSN: 0038-1098
PB Elsevier Science Ltd.
DT Journal
LA English
AB LiFePO4 is a candidate cathode material for **Li** secondary **batteries.** Fine particles of LiFePO4 was synthesized by co-precipitation and aqueous coating on the LiFePO4 was performed with a Ag nitrate solution to increase electronic conductivity Highly dispersed Ag on the particles enhances the electronic conductivity and increases the capacity. The electrochem. properties of the Ag-coated LiFePO4 a various current densities are similar to that of highly-conductive LiFePO4. The Ag coating helps to retain capacity even at high current densities.
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 66
ST iron **lithium** phosphate cathode surface silver coating **lithium battery**
IT **Battery** cathodes
Surface treatment
(improving electrochem. properties of LiFePO4 cathode material for **lithium batteries** by silver coating)
IT Secondary **batteries**
(**lithium**; improving electrochem. properties of LiFePO4 cathode material for **lithium batteries** by silver coating)
IT 7440-22-4, Silver, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(improving electrochem. properties of LiFePO4 cathode material for **lithium batteries** by silver coating)
IT **15365-14-7**, Iron **lithium** phosphate (FeLiPO4)
RL: **DEV (Device component use)**; USES (Uses)
(solver coated; improving electrochem. properties of LiFePO4 cathode material for **lithium batteries** by silver coating)
IT **15365-14-7**, Iron **lithium** phosphate (FeLiPO4)
RL: **DEV (Device component use)**; USES (Uses)
(solver coated; improving electrochem. properties of LiFePO4 cathode material for **lithium batteries** by silver coating)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 16 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:892315 HCAPLUS
DN 139:352745
TI Process of preparing active material for a **battery**
IN Cho, Jae-phil; Park, Yong-chul; Jung, Won-il; Kim, Geun-bae
PA S. Korea
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003211391	A1	20031113	US 2003-408124	20030408
	KR 2003088246	A	20031119	KR 2002-26199	20020513
	JP 2003331846	A2	20031121	JP 2003-61868	20030307
	CN 1458704	A	20031126	CN 2003-128698	20030506
PRAI	KR 2002-26199	A	20020513		

AB A process for preparing an active material for a **battery** includes the steps of preparing a coating liquid by adding a compound comprising an element X that is capable of forming a double bond with oxygen, and a compound comprising at least one from the group consisting of an alkali metal, an alkaline earth metal, a Group 13 element, a Group 14 element, a transition metal, and a rare-earth element, to water, adding a metal source to the coating liquid to **surface-treat** the metal source material, drying the **surface-treated** metal source material to prepare an active material precursor; mixing the active material precursor with a **lithium** source; and heat-treating the resultant mixture to produce an active material with a **surface-treatment layer** comprising the compound: MXOk wherein M is at least one selected from the group consisting of an alkali metal, an alkaline earth metal, a Group 13 element, a Group 14 element, a transition metal, and a rare-earth element; X is an element that can form a double bond with oxygen; and k is a numerical value in the range of 2 to 4.

IC ICM H01M004-48
INCL 429218100
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST **battery** cathode active material prepn
IT **Battery** cathodes

(process of preparing active material for **battery**)

IT 147098-69-9, Cobalt nickel hydroxide Co0.1Ni0.9(OH)2 619322-77-9, Cobalt manganese nickel carbonate (Co0.1Mn0.1Ni0.8(CO3)) 619322-78-0, Cobalt manganese nickel nitrate (Co0.1Mn0.1Ni0.8(NO3)2) 619322-79-1, Cobalt lanthanum nickel hydroxide (Co0.1La0.01Ni0.89(OH)2) **619322-80-4**, Cobalt manganese nickel sulfate (Co0.1Mn0.1Ni0.8(SO4))
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(process of preparing active material for **battery**)

IT 179802-95-0P, Cobalt **lithium** manganese nickel oxide Co0.1LiMn0.1Ni0.8O2 619322-75-7P, Cobalt **lithium** manganese nickel oxide (Co0.1Li1.03Mn0.1Ni0.8O2)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(process of preparing active material for **battery**)

IT **619322-76-8**, Aluminum phosphorus oxide (AlPO2-4)
RL: TEM (Technical or engineered material use); USES (Uses)
(surface coating; process of preparing active material for **battery**)

IT **619322-80-4**, Cobalt manganese nickel sulfate (Co0.1Mn0.1Ni0.8(SO4))
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(process of preparing active material for **battery**)

RN 619322-80-4 HCAPLUS
CN Cobalt manganese nickel sulfate (Co0.1Mn0.1Ni0.8(SO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4S	1	14808-79-8
Co	0.1	7440-48-4
Ni	0.8	7440-02-0
Mn	0.1	7439-96-5

IT **619322-76-8**, Aluminum phosphorus oxide (AlPO2-4)
RL: TEM (Technical or engineered material use); USES (Uses)
(surface coating; process of preparing active material for **battery**)

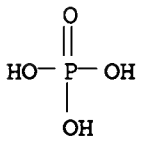
RN 619322-76-8 HCAPLUS
CN Aluminum phosphorus oxide (AlPO2-4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2 - 4	17778-80-2
P	1	7723-14-0
Al	1	7429-90-5

L44 ANSWER 17 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:581675 HCAPLUS
DN 139:397835
TI **Surface** Chemistry of Carbon-**Treated** LiFePO4 Particles for **Li**-Ion **Battery** Cathodes Studied by PES
AU Herstedt, Marie; Stjerndahl, Marten; Nyten, Anton; Gustafsson, Torbjorn; Rensmo, Hakan; Siegbahn, Hans; Ravet, Nathalie; Armand, Michel; Thomas, John O.; Edstrom, Kristina
CS Department of Materials Chemistry, Ångstrom Advanced Battery Centre,

Uppsala University, Uppsala, SE-751 21, Swed.
SO Electrochemical and Solid-State Letters (2003), 6(9), A202-A206
CODEN: ESLEF6; ISSN: 1099-0062
PB Electrochemical Society
DT Journal
LA English
AB Photoelectron spectroscopy (PES) was used for depth-profile characterization of the interface formed on C-treated LiFePO4 particles in the cathode of a **Li**-ion **battery** after electrochem. cycling at 23 and 40° in a 1M LiPF6 mixture of ethylene carbonate and di-Et carbonate. Products from solvent reactions, e.g., polycarbonates, were not detected on the C-**treated** LiFePO4 **surface**, contrary to findings for other cathode materials. Salt-based products like LiF, LiPF6, LixPFy- and LixPFyOz-type compds. were found on the cathode surface after cycling. Larger amts. of these compds. were detected on the surfaces of electrodes cycled at 40°.
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 66, 72
ST iron **lithium** phosphate carbon cathode surface chem **lithium battery**
IT Secondary **batteries**
(**lithium**; **surface** chemical of carbon-**treated** LiFePO4 particles in **Li**-ion **battery** cathodes)
IT Photoelectron spectroscopy
(**surface** chemical of carbon-**treated** LiFePO4 for **Li**-ion **battery** cathodes studied by photoelectron spectroscopy)
IT **Battery** cathodes
(**surface** chemical of carbon-**treated** LiFePO4 particles in **Li**-ion **battery** cathodes)
IT **15365-14-7**, Iron **lithium** phosphate (FeLiPO4)
RL: CPS (Chemical process); **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon-**treated**, cathode; **surface** chemical of carbon-**treated** LiFePO4 particles in **Li**-ion **battery** cathodes)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electrolyte containing; **surface** chemical of carbon-**treated** LiFePO4 particles in cathodes for **Li**-ion **batteries** with)
IT 21324-40-3, **Lithium** hexafluorophosphate (LiPF6)
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(electrolyte; **surface** chemical of carbon-**treated** LiFePO4 particles in cathodes for **Li**-ion **batteries** with)
IT 7789-24-4, **Lithium** fluoride (LiF), formation (nonpreparative)
21324-40-3D, **Lithium** hexafluorophosphate, **lithium**- and fluorine-deficient
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(in **surface** chemical of carbon-**treated** LiFePO4 for **Li**-ion **battery** cathodes)
IT 7440-44-0, Carbon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(iron **lithium** phosphate containing; **surface** chemical of carbon-**treated** LiFePO4 particles in **Li**-ion **battery** cathodes)

IT **15365-14-7**, Iron **lithium** phosphate (FeLiPO4)
RL: CPS (Chemical process); **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon-**treated**, cathode; **surface** chemical of carbon-**treated** LiFePO4 particles in **Li**-ion **battery** cathodes)
RN 15365-14-7 HCAPLUS
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

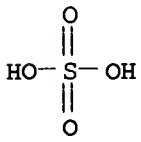
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L44 ANSWER 18 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:538368 HCAPLUS
DN 139:310011
TI Positive plate for alkaline **batteries**
IN Grigor'eva, L. K.; Zhuchenko, O. A.; Petrov, V. V.
PA Russia
SO Russ., No pp. given
CODEN: RUXXE7
DT Patent
LA Russian
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI RU 2207664	C1	20030627	RU 2002-103847	20020218
PRAI RU 2002-103847		20020218		

AB The **battery** cathode contains a Ni sponge current outlet (d. of 0.2-2.5 g/cm3, pore size 0.6-2.5 mm diameter) and an active mass which is a mixture of Ni hydroxide and Ni powder. The active mass contains Ni hydroxide 45-75, Ni powder 20-40, and an activator (e.g., Co compound, Ba(OH)2) 2-3 weight%. Bulk d. of Ni powder is 0.2-1.5 g/cm3. The active mass may also contain a 2-5% binder. A plate surface may be **covered** with a porous **layer** of an alkaline-resistant lacquer. The electrode has an enhanced activity.
IC ICM H01M004-52
ICS H01M010-24
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** cathode nickel hydroxide nickel
IT **Battery** cathodes
(for alkaline **batteries**)
IT 17194-00-2, Barium hydroxide
RL: MOA (Modifier or additive use); USES (Uses)

(activator in cathode for alkaline **batteries**)
IT **10124-43-3**, Cobalt sulfate
RL: TEM (Technical or engineered material use); USES (Uses)
(activator in cathode for alkaline **batteries**)
IT 7440-02-0, Nickel, uses 12054-48-7, Nickel hydroxide
RL: TEM (Technical or engineered material use); USES (Uses)
(in cathode for alkaline **batteries**)
IT **10124-43-3**, Cobalt sulfate
RL: TEM (Technical or engineered material use); USES (Uses)
(activator in cathode for alkaline **batteries**)
RN 10124-43-3 HCAPLUS
CN Sulfuric acid, cobalt(2+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



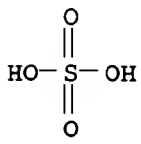
● Co(II)

L44 ANSWER 19 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:274599 HCAPLUS
DN 139:24095
TI Positive plate active mass for **batteries**
IN Agadullina, E. A.; Belyaev, A. L.; Il'enko, E. V.; Lositskii, A. F.; Polyanskii, A. I.; Rodchenkov, N. V.; Cheremnykh, G. S.; Shtutsa, M. G.
PA Otkrytoe Aktsionernoe Obshchestvo "Chepetskii Mekhanicheskii Zavod", Russia
SO Russ., No pp. given
CODEN: RUXXE7
DT Patent
LA Russian
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI RU 2194341	C1	20021210	RU 2001-111310	20010423
PRAI RU 2001-111310		20010423		

AB The pos. plate active mass consists of Ni(OH)2 57-70, Co 1-6, CoO 1-6, Co sulfate 0.5-2, poly(vinyl alc.) 0.1-0.5, EtOH 5-10 weight%, and deionized water balance. The active mass structure includes Ni(OH)2 spherical particles **covered** with a thin **layer** of Co sulfate and surrounded by smaller spherical particles of Co and CoO. The active mass has an enhanced elec. conductivity Operation time of the **battery** is increased without changing an electrolyte.
IC ICM H01M004-32
ICS H01M004-52; H01M010-30
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **battery** cathode nickel hydroxide
IT **Battery** cathodes
(nickel hydroxide-based active mass for)
IT Secondary **batteries**
(pos. plate active mass for)
IT 64-17-5, Ethanol, uses 1307-96-6, Cobalt oxide (CoO), uses 7440-48-4, Cobalt, uses 9002-89-5, Poly(vinyl alcohol) **10124-43-3**, Cobalt

sulfate 12054-48-7, Nickel hydroxide (Ni(OH)2
RL: TEM (Technical or engineered material use); USES (Uses)
(in pos. plate active mass for secondary **batteries**)
IT **10124-43-3**, Cobalt sulfate
RL: TEM (Technical or engineered material use); USES (Uses)
(in pos. plate active mass for secondary **batteries**)
RN 10124-43-3 HCAPLUS
CN Sulfuric acid, cobalt(2+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



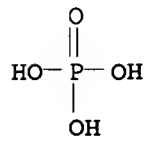
● Co(II)

L44 ANSWER 20 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:963814 HCAPLUS
DN 138:26929
TI Method for preparation of active material for **battery**
IN Cho, Jae-phil; Kim, Geun-bae; Hwang, Sang-moon
PA Samsung Sdi Co., Ltd., S. Korea
SO Eur. Pat. Appl., 52 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1267431	A1	20021218	EP 2002-8296	20020423
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	US 2003082448	A1	20030501	US 2001-995868	20011129
	KR 2002095421	A	20021226	KR 2002-9619	20020222
	JP 2003007299	A2	20030110	JP 2002-127806	20020430
	CN 1399364	A	20030226	CN 2002-118951	20020430
PRAI	US 2001-297783P	P	20010614		
	US 2001-304793P	P	20010713		
	US 2001-995868	A	20011129		

AB An active material for a **battery** has a **surface-treatment layer** including a compound of the formula: MXOk wherein M is at least one element selected from an alkali metal, an alkaline earth metal, a group 13 element, a group 14 element, a transition metal, and a rare-earth element [e.g. Na, K, Mg, Ca, Sr, Ni, Co, Si, Ti, B, Al, Sn, Mn, Cr, Fe, V, Zr], X is an element capable of forming a double bond with oxygen, e.g. P, S or W, and k is a numerical value in the range of 2 to 4.
IC ICM H01M004-62
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST **battery** electrode active material
IT Chalcogenides
Oxides (inorganic), uses
RL: DEV (Device component use); USES (Uses)

(**Li**-containing; method for preparation of active material for **battery**)
IT Secondary **batteries**
(lead-acid; method for preparation of active material for **battery**)
IT Secondary **batteries**
(**lithium**; method for preparation of active material for **battery**)
IT **Battery** electrodes
Primary **batteries**
Secondary **batteries**
(method for preparation of active material for **battery**)
IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(method for preparation of active material for **battery**)
IT **Lithium** alloy, base
RL: DEV (Device component use); USES (Uses)
(method for preparation of active material for **battery**)
IT **7784-30-7**, Aluminum phosphate
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method for preparation of active material for **battery**)
IT 7783-28-0, Diammonium hydrogen phosphate 13473-90-0, Aluminum nitrate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method for preparation of active material for **battery**)
IT **7439-93-2D**, **Lithium**, intercalation compound 7440-21-3, Silicon, uses 7704-34-9D, Sulfur, compound 12190-79-3, Cobalt **lithium** oxide colio2 18282-10-5, Tin dioxide 163596-49-4, **Lithium** manganese nickel oxide LiMn0.2Ni0.8O2 262857-75-0, Cobalt **lithium** nickel strontium oxide Co0.1LiNi0.9Sr0.002O2 406939-73-9, Aluminum cobalt **lithium** magnesium manganese nickel oxide Al0.07Co0.1Li1.03Mg0.07Mn0.19Ni0.69O2
RL: DEV (Device component use); USES (Uses)
(method for preparation of active material for **battery**)
IT **7784-30-7**, Aluminum phosphate
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; method for preparation of active material for **battery**)
RN 7784-30-7 HCAPLUS
CN Phosphoric acid, aluminum salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Al

IT **7439-93-2D**, **Lithium**, intercalation compound
RL: DEV (Device component use); USES (Uses)
(method for preparation of active material for **battery**)
RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

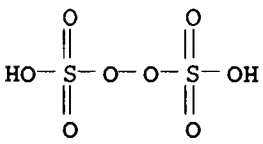
L44 ANSWER 21 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:518133 HCAPLUS
DN 137:96240
TI Cathode active mass containing cobalt rare earth hydroxide, its manufacture, and secondary alkaline **battery** using it
IN Furukawa, Kengo; Kodama, Mitsuhiro; Kurokuzuhara, Minoru; Hatsuyo, Kaori; Watada, Shoji; Oshitani, Masahiko
PA Yuasa Corporation, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2002198046	A2	20020712	JP 2000-392117	20001225
PRAI JP 2000-392117		20001225		

AB The title active mass, for a cathode consisting of a core layer containing Ni hydroxide and a surface layer containing a hydroxide of Co and rare earth metal, contains Co having ≥3 valency after oxidation **treatment** in the **surface layer.** The active mass is manufactured by oxidation treatment with an oxidizing agent in an aqueous alkali solution containing K, Na, and/or **Li.** A secondary alkaline **battery** equipped with the above cathode active mass is also claimed. The **battery** provides good charging characteristics by keeping high-rate discharge characteristics.

IC ICM H01M004-52
ICS H01M004-32; H01M010-30
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST cobalt rare earth hydroxide nickel cathode oxidn alk **battery**
IT Chlorates
Chlorites
Hypochlorites
RL: NUU (Other use, unclassified); USES (Uses)
(oxidizing agent; oxidation in manufacture of cobalt rare earth hydroxide in nickel cathode for alkaline **battery**)
IT **Battery** cathodes
Oxidation
Oxidizing agents
Secondary **batteries**
(oxidation in manufacture of cobalt rare earth hydroxide in nickel cathode for alkaline **battery**)
IT **7727-21-1**
RL: NUU (Other use, unclassified); USES (Uses)
(oxidizing agent; oxidation in manufacture of cobalt rare earth hydroxide in nickel cathode for alkaline **battery**)
IT 12054-48-7, Nickel hydroxide
RL: DEV (Device component use); USES (Uses)
(oxidation in manufacture of cobalt rare earth hydroxide in nickel cathode for alkaline **battery**)
IT 215057-05-9P, Cobalt yttrium hydroxide 441769-57-9P, Cobalt ytterbium hydroxide 441769-58-0P, Cobalt erbium hydroxide 441769-59-1P, Cobalt

thulium hydroxide 441769-60-4P, Cobalt lutetium hydroxide 441769-61-5P
441769-98-8P, Cobalt holmium hydroxide
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(oxidation in manufacture of cobalt rare earth hydroxide in nickel cathode for
alkaline **battery**)
IT **7727-21-1**
RL: NUU (Other use, unclassified); USES (Uses)
(oxidizing agent; oxidation in manufacture of cobalt rare earth hydroxide in nickel cathode for alkaline **battery**)
RN 7727-21-1 HCAPLUS
CN Peroxydisulfuric acid ([(HO)S(O)2]2O2), dipotassium salt (9CI) (CA INDEX NAME)



●2 K

L44 ANSWER 22 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:365929 HCAPLUS
DN 131:33888
TI **Surface-treated** hydrogen-absorbing alloys, **surface treatment** process, and hydride electrodes made of **surface-treated** hydrogen-absorbing alloys
IN Kotani, Akira; Sakai, Tetsuo; Kuriyama, Nobuhiro; Ishihara, Kazuhiko
PA Okuno Chemical Industry Co., Ltd., Japan; Agency of Industrial Sciences and Technology
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11154511	A2	19990608	JP 1997-336510	19971119
PRAI JP 1997-336510		19971119		

AB Zr-Ni alloys having surface layers mainly comprising metallic Ni fine-grain particles are claimed. Zr-Ni H-absorbing alloys are **surface treated** with an alkaline solution containing a dissolving agent and a reducing agent to give the above alloys. Hydride electrodes that are unified products of collectors with powders containing the **surface-treated** alloys are also claimed.
Batteries having high capacity and excellent initial activation characteristics can be manufactured
IC ICM H01M004-38
ICS B22F001-00; B22F001-02; C22C019-00; C23C018-31; C23C018-36; H01M004-24
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56

ST **surface treatment** hydrogen absorbing alloy electrode; zirconium nickel alloy **battery** electrode

IT Etching
(alkaline; **surface treatment** of Zr-Ni H-absorbing alloys for formation of Ni particle-containing surface layers for hydride electrodes)

IT Alloys, uses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(hydrogen-absorbing; **surface treatment** of Zr-Ni H-absorbing alloys for formation of Ni particle-containing surface layers for hydride electrodes)

IT **Battery** anodes
(**surface treatment** of Zr-Ni H-absorbing alloys for formation of Ni particle-containing surface layers for hydride electrodes)

IT 7440-02-0P, Nickel, uses
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**surface layer** containing; **surface treatment** of Zr-Ni H-absorbing alloys for formation of Ni particle-containing surface layers for hydride electrodes)

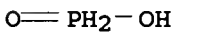
IT 193678-39-6
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**surface treatment** of Zr-Ni H-absorbing alloys for formation of Ni particle-containing surface layers for hydride electrodes)

IT 56-40-6, Glycine, uses 74-94-2, Dimethylamine borane 127-09-3, Sodium acetate 139-33-3, Ethylenediamine tetraacetic acid disodium salt 302-01-2, Hydrazine, uses 304-59-6, Potassium sodium tartrate, uses 1310-58-3, Potassium hydroxide, uses 1310-65-2, **Lithium** hydroxide 1310-73-2, Sodium hydroxide, uses **7681-53-0**, Sodium hypophosphite 16940-66-2, Sodium borohydride
RL: NUU (Other use, unclassified); USES (Uses)
(**treatment** in; **surface treatment** of Zr-Ni H-absorbing alloys for formation of Ni particle-containing surface layers for hydride electrodes)

IT **7681-53-0**, Sodium hypophosphite
RL: NUU (Other use, unclassified); USES (Uses)
(**treatment** in; **surface treatment** of Zr-Ni H-absorbing alloys for formation of Ni particle-containing surface layers for hydride electrodes)

RN 7681-53-0 HCAPLUS

CN Phosphinic acid, sodium salt (8CI, 9CI) (CA INDEX NAME)



L44 ANSWER 23 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:40015 HCAPLUS

DN 130:98063

TI Nonaqueous electrolyte **batteries**

IN Fukuda, Yutaka; Tanaka, Keiichi; Hosokawa, Takehiro

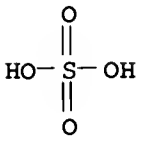
PA Sumitomo Electric Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11007921	A2	19990112	JP 1997-336218	19971208
	JP 3137061	B2	20010219		
PRAI	JP 1997-103766	A	19970422		

AB The **batteries** have electrodes and an electrolyte sealed in a metal-polymer laminate bag, where the electrolyte side of the metal **layer** is **covered** with an acid modified polyethylene, acid modified polypropylene, or an ionomer layer by hot pressing.
IC ICM H01M002-02
ICS H01M002-06; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** case metal acid modified polymer; polyethylene acid modified metal **battery** case; polypropylene acid modified metal **battery** case; ionomer metal laminate **battery** case
IT Primary **batteries**
Secondary **batteries**
(aluminum foils laminated with acid modified polyethylene on electrolyte side for nonaq. electrolyte **batteries**)
IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(acid modified; aluminum foils laminated with acid modified polyethylene on electrolyte side for nonaq. electrolyte **batteries**)
IT 471-34-1, Calcium carbonate, uses 1309-48-4, Magnesia, uses **7487-88-9**, Magnesium sulfate, uses
RL: MOA (Modifier or additive use); USES (Uses)
(acid trapping agents in acid modified polymer layer laminated with aluminum foils for nonaq. electrolyte **batteries**)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(aluminum foils laminated with acid modified polyethylene on electrolyte side for nonaq. electrolyte **batteries**)
IT 98036-77-2, Hydrotalcite
RL: MOA (Modifier or additive use); USES (Uses)
(fired; acid trapping agents in acid modified polymer layer laminated with aluminum foils for nonaq. electrolyte **batteries**)
IT **7487-88-9**, Magnesium sulfate, uses
RL: MOA (Modifier or additive use); USES (Uses)
(acid trapping agents in acid modified polymer layer laminated with aluminum foils for nonaq. electrolyte **batteries**)
RN 7487-88-9 HCAPLUS
CN Sulfuric acid magnesium salt (1:1) (8CI, 9CI) (CA INDEX NAME)



L44 ANSWER 24 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:433205 HCAPLUS
DN 127:97546
TI Nonaqueous electrolyte **batteries** with good storage stability
IN Yanai, Atsushi; Kusumoto, Yasuyuki; Yamazaki, Mikiya; Noma, Toshiyuki; Nishio, Koji
PA Sanyo Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

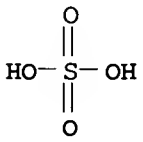
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09147840	A2	19970606	JP 1995-329509	19951124
	JP 3443224	B2	20030902		
PRAI	JP 1995-329509		19951124		

AB Anodes of the **batteries** are obtained by addition of ammonium sulfates to Mn oxide-based anode materials and subsequent heat treatment of the mixts. Preferably, 0.1-30 mol% (per Mn) ammonium sulfates are added. Preferably, ammonium sulfates of Fe2+, Co2+, or Al are used. The ammonium sulfates react with the Mn oxides in the anode materials to form composite oxides, which protect surface of the Mn oxides and prevent reaction of the Mn oxides with nonaq. electrolyte solns. As a result, self-discharge is decreased and storage stability is improved.

IC ICM H01M004-06
ICS H01M004-08; H01M004-50; H01M006-16
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST manganese oxide anode nonaq electrolyte **battery**; ammonium sulfate treatment manganese oxide anode; storage stability nonaq electrolyte **battery** anode
IT **Battery** anodes
(nonaq. electrolyte **batteries** having anodes containing Mn oxides **surface-treated** with ammonium sulfates for good storage stability)
IT 1313-13-9, Manganese oxide (MnO2), uses 7783-20-2, Ammonium sulfate, uses **7783-83-7 7784-25-0**, Aluminum ammonium sulfate (AlNH4(SO4)2) **13586-38-4 15699-18-0 31512-54-6** 39457-42-6, **Lithium** manganese oxide
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)
(nonaq. electrolyte **batteries** having anodes containing Mn oxides **surface-treated** with ammonium sulfates for good storage stability)
IT **7783-83-7 7784-25-0**, Aluminum ammonium sulfate (AlNH4(SO4)2) **13586-38-4 15699-18-0 31512-54-6**
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)

(nonaq. electrolyte **batteries** having anodes containing Mn oxides **surface-treated** with ammonium sulfates for good storage stability)

RN 7783-83-7 HCAPLUS
CN Sulfuric acid, ammonium iron(3+) salt (2:1:1), dodecahydrate (8CI, 9CI) (CA INDEX NAME)

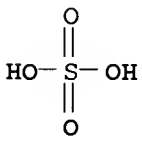


●1/2 Fe(III)

●1/2 NH_3

●6 H_2O

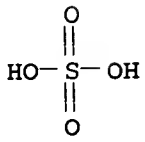
RN 7784-25-0 HCAPLUS
CN Sulfuric acid, aluminum ammonium salt (2:1:1) (8CI, 9CI) (CA INDEX NAME)



●1/2 Al

●1/2 NH_3

RN 13586-38-4 HCAPLUS
CN Sulfuric acid, ammonium cobalt(2+) salt (2:2:1), hexahydrate (8CI, 9CI) (CA INDEX NAME)

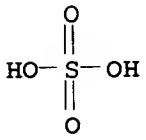


●1/2 Co(II)

● NH_3

●3 H_2O

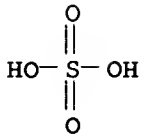
RN 15699-18-0 HCAPLUS
CN Sulfuric acid, ammonium nickel(2+) salt (2:2:1) (8CI, 9CI) (CA INDEX NAME)



● NH_3

●1/2 Ni(II)

RN 31512-54-6 HCAPLUS
CN Sulfuric acid, ammonium iron(3+) salt (2:1:1), hexahydrate (9CI) (CA INDEX NAME)



●1/2 Fe(III)

●1/2 NH_3

●3 H_2O

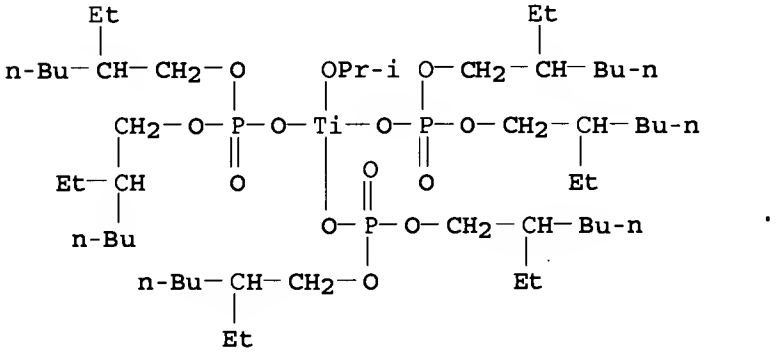
L44 ANSWER 25 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1993:150990 HCAPLUS
DN 118:150990
TI Secondary nonaqueous-electrolyte **lithium battery**
IN Sekai, Kohji; Endo, Takuya
PA Sony Corp., Japan
SO Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 511632	A1	19921104	EP 1992-107216	19920428
	EP 511632	B1	19971119		
	R: DE, FR, GB				
	JP 04329267	A2	19921118	JP 1991-126913	19910430
	JP 05013082	A2	19930122	JP 1991-185129	19910629
PRAI	JP 1991-126913	A	19910430		
	JP 1991-185129	A	19910629		

AB The **battery** has a **Li** or a **Li**-intercalatable carbonaceous anode and a LixTiyCo1-yO2 cathode, where x ≤1.10 and 0 < y ≤0.05. The cathode can also be an inorg. compound with a Ti-added surface layer, which can be formed by **surface treatment** of the compound with a Ti-coupling agent and a subsequent heat treatment.

IC ICM H01M004-58
ICS H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST cathode **battery lithium** cobalt oxide; **lithium** cobalt titanium oxide cathode
IT **Batteries**, secondary
(**lithium/lithium** cobalt titanium oxide, long cycle-life)
IT Cathodes
(**battery, lithium** cobalt titanium oxide)

IT 7440-32-6, Titanium, uses
RL: USES (Uses)
(cathodes from **lithium** cobalt oxide with surface layer containing, for **lithium batteries** for long cycle life)
IT 146613-43-6, Cobalt **lithium** titanium oxide (Co0.95-1Li0-1.1Ti0-0.05O2)
RL: USES (Uses)
(cathodes, for **lithium batteries** for long cycle life)
IT 12190-79-3, Cobalt **lithium** oxide (CoLiO2)
RL: USES (Uses)
(cathodes, with titanium-added surface layer, for **lithium batteries** for long cycle life)
IT 61417-49-0, Isopropyltrisostearoyl titanate 65380-84-9, Isopropyltris(N-aminoethyl-aminoethyl)titanate
RL: USES (Uses)
(in cathode preparation from **lithium** cobalt oxide with surface-added titanium, for **lithium batteries**)
IT **65345-34-8P**, Isopropyltris(dioctylphosphate)titanate
RL: PREP (Preparation)
(kinetics cathode preparation from **lithium** cobalt oxide with surface-added titanium, for nonaq.-electrolyte **batteries**)
IT **65345-34-8P**, Isopropyltris(dioctylphosphate)titanate
RL: PREP (Preparation)
(kinetics cathode preparation from **lithium** cobalt oxide with surface-added titanium, for nonaq.-electrolyte **batteries**)
RN 65345-34-8 HCAPLUS
CN Titanium, tris[bis(2-ethylhexyl) phosphato-κO''](2-propanolato)-, (T-4)- (9CI) (CA INDEX NAME)



L44 ANSWER 26 OF 26 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1965:49050 HCAPLUS
DN 62:49050
OREF 62:8670h,8671a-b
TI Electrosynthesis of p-nitrobenzoic acid
AU Kolevatova, V. S.; Kolesova, S. A.
SO Sb. Nauchn. Tr. Permsk. Politekhn. Inst. (1963), (14), 54-64
From: Ref. Zh., Khim. 1964, Abstr. No. 19L155.
DT Journal
LA Russian
AB Oxidation of p-nitrotoluene (I) to p-nitrobenzoic acid (II) by electrolysis in H2SO4 was studied. The effects of the electrolyte composition (concentration of

H2SO4 and I), catalysts (type and concentration), anodic c.d. (Da), surfactants, and temperature on the current efficiency of II were investigated. Without catalysts, II can be synthesized in 50% H2SO4 with only addition of 20% HNO3. Pos. results were obtained in H2SO4 solns. on Pb anodes and **battery** plates **covered** with a **layer** of PbO2. A Hg cathode dissolved considerably. Optimum conditions were: I 50 g./l. H2SO4 50%, catalyst (MnSO4, CrCl3, Ce2(SO4)3) 15 mg./l., Da 3.5 amp./sq. dm., temperature 80°. Under all conditions the current efficiency of II was ≤1.5%. Higher current efficiencies were obtained in solns. containing K2Cr2O7 but in this case I was chemical oxidized to II by K2Cr2O7. Formation of II from electrolysis of an emulsion of I in H2SO4 takes place as a result of direct oxidation of I on the anode. I mols. are adsorbed on the electrode and then release electrons of the Me group, being oxidized thereby to II. In the presence of strong surfactants II does not form. Surfactant mols. occupy adsorption centers and thus prevent adsorption of I and its anode oxidation

CC 15 (Electrochemistry)

IT Catalysts and Catalysis
(in oxidation, of p-nitrotoluene, Ce2(SO4)3, CrCl3 and MnSO4 as)

IT Adsorption
(of p-nitrotoluene by electrodes in p-aminobenzoic acid synthesis by electrolysis, surfactant effect on)

IT Surface-active substances
(p-nitrotoluene electrooxidn. in presence of)

IT **7785-87-7**, Manganese sulfate, MnSO4 10025-73-7, Chromium chloride, CrCl3
(catalysts, in oxidation of p-nitrotoluene)

IT 13454-94-9, Cerium sulfate, Ce2(SO4)3
(in oxidation of p-nitrotoluene)

IT 99-99-0, Toluene, p-nitro-
(oxidation of, electrochem. in H2SO4)

IT 621-82-9, Cinnamic acid
(oxidation-reduction potential of)

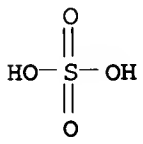
IT 62-23-7, Benzoic acid, p-nitro-
(preparation of, electrochem)

IT 7664-93-9, Sulfuric acid
(p-nitrotoluene electrolytic oxidation in)

IT **7785-87-7**, Manganese sulfate, MnSO4
(catalysts, in oxidation of p-nitrotoluene)

RN 7785-87-7 HCAPLUS

CN Sulfuric acid, manganese(2+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Mn(II)

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